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U.S. Department of Commerce Patent and Trademark Office Attorney's Docket No. 17601-019001

Application No. 10/003,917

ormation Disclosure Statement

by Applicant (Use several sheets if necessary)

Applicant Joseph A. Zupanick et al.

Filing Date

Group Art Unit

November 1, 2001

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			U.S. Patent	Documents			
Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
JK	Al	3,687,204	08/29/1972	Marshall et al.			
l	A2	3,759,328	09/18/1973	Ueber et al.			
	A3	4,296,969	10/27/1981	Willman			
	A4	4,356,866	11/02/1982	Savins			
	A5	4,396,075	08/02/1983	Wood et al.			
	A6	5,207,271	05/04/1993	Sanchez et al.			
	A7	5,520,252	05/28/1996	McNair			
	A8	5,664,911	09/09/1997	Bridges et al.			
	A9	5,733,067	03/31/1998	Hunt et al.			
	A10	RE 38,642 E	11/02/2004	Gondouin			
	All	2005/0252689 A1	11/17/2005	Gardes			
	A12	2005/0257962 A1	11/24/2005	Zupanick			
JK	A13	2006/0096755 A1	05/11/2006	Zupanick			

	Foreig	n Patent Docur	nents or Pub	lished Foreign	Patent A	Application	ns	
Examiner	Desig.	Document	Publication	Country or			Trans	lation
Initial	ID	Number	Date	Patent Office	Class	Subclass	Yes	No
JK	B1	UA 37,720 A	05/15/2001	Ukraine			Spec Only	
JK	B2	WO 03/038233	05/08/2003	WIPO			N/A	
JK	В3	WO 2005/012688	02/10/2005	WIPO			N/A	

	Other Documents (include Author, Title, Date, and Place of Publication)				
Examiner Initial	Desig. ID	Document			
JK	Cl	Notification of Transmittal of the International Preliminary Report on Patentability (1 page) and International Preliminary Report on Patentability (8 pages) for International Application No. PCT/US2005/002162 mailed May 3, 2006			
JK	C2	D. Nathan Meehan, "Technology Vital For Horizontal Well Success," OIL & GAS JOURNAL, December 11, 1995, 8 pages			
JK	C3	B.A. Tarr, A.F. Kuckes and M.V. Ac, "Use of New Ranging Tool to Position a Vertical Well Adjacent to a Horizontal Well," SPE DRILLING ENGINEERING, June 1992, 7 pages			
JK	C4	William J. McDonald, Ph.D., John H. Cohen, and C. Mel Hightower, "New Lightweight Fluids for Underbalanced Drilling," believed to be on or about 1998, 10 pages			

Examiner Signature

Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Bubshitute Form PTO-1449 (Mod (1809)

next communication to applicant.

U.S. Department of Commerce Patent and Trademark Office

Attorney's Docket No. 17601-019001

Application No. 10/003,917

Information Disclosure Statement by Applicant (Use several sheets if necessary)

Applicant

Joseph A. Zupanick et al.

Filing Date

November 1, 2001

Group Art Unit 3673

xaminer	Desig.	Document		
Initial ID		Philip C. Crouse, "Application and Needs for Advanced Multilateral Technologies and Strategies,"		
JK	C5	Website: www.netl.doe.gov/publications/proceedings/97/97ng/ng97_pdf/NG2-5.pdf; Believed to be		
	C6	Dan Themig, "Multi-Laterals Providing New Options," THE AMERICAN OIL & GAS REPORTER, V. 39, No. 7, July 1996, 4 pages		
	C7	Daniel D. Gleltman, "Integrated Underbalanced Directional Drilling System," Interim Report for Period of Performance 10/1/95 – 2/14/96, DOE FETC Contract DE-AC21-95MC31103, March 1997, 23 pages		
	C8	J.D. Gallivan, N.R. Hewitt, M. Olsen, J.M. Peden, D. Tehrani and A.A.P. Tweedie, "Quantifying the Benefits of Multi-Lateral Producing Wells," SPE 30441, Society of Petroleum Engineers, Inc., Copyright 1995, 7 pages		
	C9	C.A. Ehlig-Economides, G.R. Mowat and C. Corbett, "Techniques for Multibranch Well Trajectory Design in the Context of a Three-Dimensional Reservoir Model," SPE 35505, Society of Petroleum Engineers, Copyright 1996, 8 pages		
	C10	Stephen R. Dittoe, Albertus Retnanto, and Michael J. Economides, "An Analysis of Reserves Enhancement in Petroleum Reservoirs with Horizontal and Multi-Lateral Wells," SPE 37037, Society of Petroleum Engineers, Copyright 1996, 9 pages		
	C11	D.L. Boreck and M.T. Strever, "Conservation of Methane from Colorado's Mined Minable Coal Beds: A Feasibility Study," Open-File Report 80-5, Colorado Geological Survey, Department of Network Resources, Department Of Colorado, October 1980, 101 pages		
	C12	B.G. kta and T. Ertekin, "Implementation of a Local Grid Refinement Technique in Modeling Slanted, Undulating Horizontal and Multi-Lateral Wells," SPE 56624, Society of Petroleum Engineers, Copyright 1999, 10 pages		
	C13	W.H. Leach Jr., "New Technology for CBM Production," Oil and Gas Investor, Opportunities in		
	C14	David Wagman, "CBM Investors Keep Their Guard Up," Oil and Gas Investor, Opportunities in Coalbed Methane, December 2002, 5 pages		
	C15	Stephen D. Schwochow, "CBM: Coming to a Basin Near You," Oil and Gas Investor, Opportunities in Coalbed Methane, December 2002, 7 pages		
	C16	"White Paper: Guidebook on Coalbed Methane Drainage for Underground Coal Mines," paper prepared under U.S. Environmental Protection Agency Cooperative Agreement No. CX824467-01 with The Pennsylvania State University by Jan M. Mutmansky, April 1999, 50 pages		
	C17	M.G. Zabetakis, Maurice Deul, and M.L. Skow, "Methane Control in United States Coal Mines – 1972," Information Circular 8600, United States Department of the Interior, Bureau of Mines Information Circular/1973, 26 pages		
	C18	B. Goktas, "A Comparative Analysis of the Production Characteristics of Cavity Completions and Hydraulic Fractures in Coalbed Methane Reservoirs," Society of Petroleum Engineers, SPE 556		
	C19	William P. Diamond and David C. Oyler, "Drilling Long Horizontal Coalbed Methane Drainage Holes from a Directional Surface Borehole," Society of Petroleum Engineers, SPE/DOE 8968, 1980, 6 pages		
JK	C20	Turgay Ertekin, Wonmo Sung, and Fred C. Schwerer, "Production Performance Analysis of Horizontal Drainage Wells for the Degasification of Coal Seams," JOURNAL OF PETROLEUM TECHNOLOGY, May 1988, 8 pages		
Examiner S	ignature	Date Considered		

Substitute Disclosure Form (PTO-1449)

6	Potentitute Form PTO-1449	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 17601-019001	Application No. 10/003,917
Information Dis	closure Statement	Applicant Joseph A. Zupanick et al.		
	(Use several si	neets if necessary)	Filing Date November 1, 2001	Group Art Unit 3673

	· · · · · · · · · · · · · · · · · · ·	ocuments (include Author, Title, Date, and Place of Publication)
Examiner Initial	Desig.	Document
JK	C21	Patrick B. Tracy, "Lateral Drilling Technology Tested on UCG Project," IADC/SPE 17237, IADC/SPE Drilling Conference, Copyright 1988, 10 pages
	C22	P.S. Sarkar and J.M. Rajtar, "Transient Well Testing of Coalbed Methane Reservoirs With Horizontal Wells," SPE 27681, Society of Petroleum Engineers, Copyright 1994, 9 pages
	C23	R.A. Schraufnagel, D.G. Hill and R.A. McBane, "Coalbed Methane - A Decade of Success," SPE 28581, Society of Petroleum Engineers, Copyright 1994, 14 pages
	C24	J.R. Kelafant, C.M. Boyer, and M.D. Zuber, "Production Potential and Strategies for Coalbed Methane in the Central Appalachian Basin," SPE 18550, Society of Petroleum Engineers, Copyrigh 1988, 8 pages
	C25	lan Palmer, John McLennan, and Mike Kutas, "Completions and Stimulations for Coalbed Methane Wells," SPE 30012, Society of Petroleum Engineers, Copyright 1995, 13 pages
	C26	John E. Jochen and Bradley M. Robinson, "Survey of Horizontal Gas Well Activity," SPE 35639, Society of Petroleum Engineers, Copyright 1996, 5 pages
	C27	R.G. Jeffrey, J.R. Enever, J.H. Wood, J.P. Connors, S.K. Choi, K.T.A. Meaney, D.A. Casey, and R.A. Koenig, "A Stimulation and Production Experiment in a Vertical Coal Seam Gas Drainage Well," SPE 36982, Society of Petroleum Engineers, Copyright 1996, 7 pages
	C28	Matt C. Rowan and Michael J. Whims, "Multilateral Well Enhances Gas Storage Deliverability," OIL & GAS JOURNAL, December 25, 1995, 4 pages
	C29	Dan Themig, "Planning and Evaluation are Crucial to Multilateral Wells," Petroleum Engineer International, January 1996, 3 pages
	C30	Larry Comeau, Randy Pustanyk, Ray Smith and Ian Gilles, "Lateral Tie-Back System Increases Reservoir Exposure," WORLD OIL, July 1995, 5 pages
	C31	J. Smith, M.J. Economides and T.P. Frick, "Reducing Economic Risk in Areally Anisotropic Formations With Multiple-Lateral Horizontal Wells," SPE 30647, Society of Petroleum Engineers, Copyright 1995, 14 pages
	C32	Scott Thomson, Andrew Lukas, and Duncan McDonald, "Maximising Coal Seam Methane Extraction through Advanced Drilling Technology," Lucas, Technical Paper, Second Annual Australian Coal Seam & Mine Methane Conference, February 19-20, 2003, 14 pages
	C33	William P. Diamond and David C. Oyler, "Directional Drilling for Coalbed Degasification in Advance of Mining," Proceedings of the 2 nd Annual Methane Recovery from Coalbeds Symposium April 18-20, 1979, 17 pages
	C34	John L. Stalder, Gregory D. York, Robert J. Kopper, Carl M. Curtis and Tony L. Cole, and Jeffrey H. Copley, "Multilateral-Horizontal Wells Increase Rate and Lower Cost Per Barrel in the Zuata Field, Faja, Venezuela," SPE 69700, Society of Petroleum Engineers, Copyright 2001, 9 pages
	C35	Brent Lowson, "Multilateral-Well Planning," Synopsis of SPE 39245, JPT, July 1998, 4 pages
	C36	A. Njaerheim, R. Rovde, E. Kvale, S.A. Kvamme, and H.M. Bjoerneli, "Multilateral Well in Low-Productivity Zones," Synopsis of SPE 39356, JPT, July 1998, 4 pages
	C37	S.W. Bokhari, A.J. Hatch, A. Kyei, and O.C. Werngren, "Improved Recovery from Tight Gas Sand with Multilateral Drilling," Synopsis of SPE 38629, JPT, July 1998, 4 pages
JK	C38	S.K. Vij, S.L. Narasaiah, Anup Walia, and Gyan Singh, "Adopting Multilateral Technology," Synopsis of SPE 39509, JPT, July 1998, 3 pages

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if no	t in conformance and not considered. Include copy of this form with
next communication to applicant.	

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U.S. Department of Commerce Patent and Trademark Office

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(Other Do	ocuments (include Author, Title, Date, and Place of Publication)
Examiner	Desig.	
Initial	ID	Document District "Diseasing the Controlled Drilling to
		William P. Diamond, David C. Oyler, and Herbert H. Fields, "Directionally Controlled Drilling to
JK C39		Horizontally Intercept Selected Strata, Upper Freeport Coalbed, Green County, PA," Bureau of
		Adings Banast of Investigations/1977 RI 8231 1977, 25 pages
		David C. Oyler, William P. Diamond, and Paul W. Jeran, "Directional Drilling for Coaldea
	C40	Degasification," Program Goals and Progress in 1978, Bureau of Mines Report of
1	040	
		United States Department of the Interior, "Methane Control Research: Summary of Results, 1964-
1	C41	Loon D Chinag Dulletin Bulletin 687 1988 IXX pages
	ļ	EPA, "Identifying Opportunities for Methane Recovery at U.S. Coal Mines: Profiles of Selected
		Gassy Underground Coal Mines 1997-2001," EPA Publication EPA 430-K-04-003, July 2004, 202
	C42	
Ì		pages "OFFICIORE April 1997
	642	Marshall DeLuca, "Multilateral Completions on the Verge of Mainstream," OFFSHORE, April 1997,
ŀ	C43	
	- 	2 pages Bob Williams, "Operators Unlocking North Slope's Viscous Oil Commerciality," OIL & GAS
	C44	1 A C 2001 5 mages
	 	Journal, August 6, 2001, 5 pages James P. Oberkircher, "The Economic Viability of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, Society of Multilateral Wells," IADC/SPE 59202, Society of Multilateral Wells, "IADC/SPE 59202, "I
.	C45	Petroleum Engineers, Copyright 2000, 10 pages
	ļ	Petroleum Engineers, Copyrigin 2009, 18 person 2 Technology 2 " WORLD OIL June 2001 3 page
	C46	Jim Oberkircher, "What is the Future of Multilateral Technology?," WORLD OIL, June 2001, 3 page
		Rick Von Flatern, "Operators Are Ready For More Sophisticated Multilateral Well Technology,"
C47		I make the transfer of Indiana I I I I I I I I I I I I I I I I I I
		Kyle S. Graves, "Multiple Horizontal Drainholes Can Improve Production," OIL & GAS JOURNAL,
ļ	C48	1 move 1 to 1 = 14 1004 5 mores
		Guntis, Moritis, "Sincor Nears Upgrading, Plateau Production Pnase," CIL & GAS JOURNAL,
	C49	Guntis, Moritis, "Sincor Wears Opgrauing, Flateau Frouzellon Franco," Old Education Franco, Control of the Cont
	0.15	October 29, 2001, 1 page
	C50	Guntis Moritis, "Smart, Intelligent Wells," OIL & GAS JOURNAL, April 2, 2001, 6 pages
		Craig Coull, "Intelligent Completion Provides Savings for Snorre TLP," OIL & GAS JOURNAL, Apri
	C51	Craig Count, Intelligent Completion I Toridas Sarings Jac.
		2, 2001, 2 pages D.T. Vo and M.V. Madden, "Performance Evaluation of Trilateral Wells: Field Examples," SPE
1	C52	D.T. Vo and M.V. Madden, "Performance Evaluation of The Business Volume Language Volume Langua
İ	C32	28376, Society of Petroleum Engineers, copyright 1994, 16 pages
1	0.50	Dean E. Gaddy, "Pioneering Work, Economic Factors Provide Insights Into Russian Drilling
- 1	C53	1 TO 1 -1 POUR & CAR TOURNAL HILV 6 199X 3 DAPES
		"Optimal Multilateral-Well Design for a Heavy-Oil Reservoir," Synopsis of SPE 37554 by D.W.
	C54	D. L INT. July 1007, 2 pages
		"Multilateral-Well Completion-System Advances," Synopsis of SPE 39125 by J.R. Longbottom et
	C55	1 IDE I 1.1007 2 mages
		al., JPT, July 1997, 3 pages "Optimal Multilateral/Multibranch Completions," Synopsis of SPE 38033 by Hironori Sugiyama e
1	C56	"Optimal Multilateral/Multibranch Completions, Synopsis of the Bosses by the second
		al., JPT, July 1997, 5 pages
	CSI	"Multilateral Experiences: IDD El Shargi North Dome Field (QATAR)," Synopsis of SPE 37675 b
1	C57	lin a cultival IDT fulcitory 3 pages
777		"Moving Toward the 'Intelligent Well'," Synopsis of SPE 39126 by Clark E. Robison, JPT, July
JK	C58	1997, 3 pages

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if no	ot in conformance and not considered. Include copy of this form with
next communication to applicant.	Substitute Disclosure Form (PTO-1449)

6	Substitute Form PTO-1449 (Modified a	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 17601-019001	Application No. 10/003,917
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	Other Do	ocuments (include Author, Title, Date, and Place of Publication)
Examiner	Desig.	
Initial	ID	Document
JK	C59	"Short-Radius Laterals: An Operator's Experience," Synopsis of SPE 37493 by C. Ellis et al., JPT, July 1997, 3 pages
ı	. C60	"Analyzing a Multilateral-Well Failure," Synopsis of SPE 38268 by A. Ray Brister, JPT, July 1997,
	C61	3 pages "A New Concept for Multibranch Technology," Synopsis of SPE 39123 by Mark Stracke et al., JPT,
-	<u> </u>	July 1997, 3 pages "Classification Clarifies Multilateral Options," Synopsis of SPE 38493 by C. Hogg, JPT, July 1997,
	C62	3 pages "Infill Development With Multilateral-Well Technology," Synopsis of SPE 38030 by Sau-Wai Wong
	C63	et al., JPT, July 1997, 3 pages Brad Califf and Denny Kerr, "UPRC Completes First Quad-Lateral Well," PETROLEUM ENGINEER
	C64	Lymphy Figure Contember 1003 4 pages
	C65	Jack Winton, "Use of Multi-lateral Wells to Access Marginal Reservoirs," OFFSHORE, February
	C66	J.R. Salas, P.J. Clifford and D.P. Jenkins, "Brief: Multilateral Well Performance Prediction, JP1,
	C67	Mike R. Chambers, "Multilateral Technology Gains Broader Acceptance," OIL & GAS JOURNAL, November 23, 1998, 5 pages
	C68	S. Ikeda, T. Takeuchi, and P.C. Crouse, "An Investigative Study on Horizontal Well and Extended Reach Technologies With Reported Problem Areas and Operational Practice in North America and Europe." IADC/SPE 35054, Society of Petroleum Engineers, Copyright 1996, 8 pages
	C69	Greg Nazzal, "Extended-Reach Wells Tap Outlying Reserves," WORLD OIL, March 1993, 8 pages
	C70	Bambang Tjondrodiputro, Harry Eddyarso and Kim Jones, "How ARCO Drills High-Angle Wells Offshore Indonesia," WORLD OIL, March 1993, 11 pages
	C71	S. Hovda, et al., "World's First Application of a Multilateral System Combining a Casea and Cemented Junction With Fullbore Access to Both Laterals," SPE 36488, Society of Petroleum
	C72	Robert A. Gardes, "Micro-annulus Under-balanced Drilling of Multilateral Wells," OFFSHORE, Way
	C73	Brent Lowson, "Phillips Multilateral Features Several Firsts for North Sea," OFFSHORE, February
	C74	J.R. Scofield, B. Laney and P. Woodard, "Field Experience With Multi-Laterals in the Ida El Shargi North Dome Field (Qatar)," SPE/IADC 37675, Society of Petroleum Engineers, Copyright 1997, 11
	C75	Jeremy Beckman, "Coiled Tubing, Reamer Shoes Push Through Barriers in North Sea Wells,
	C76	C.H. Fleming, "Comparing Performance of Horizontal Versus Vertical Wells," WORLD OIL, March
	C77	Larry A. Cress and Stephen W. Miller, "Dual Horizontal Extension Drilled Using Retrievable
JK	C78	Guntis Moritis, "Heavy Oil Expansions Gather Momentum Worldwide," Oil & Gas Journal, August 14, 1995, 6 pages

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if no next communication to applicant.	
next communication to applicant.	Substitute Disclosure Form (PTO-1449)

/0	Substitute Form PTO-1449 (Modifies)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 17601-019001	Application No. 10/003,917
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\	(Use several she	ets if necessary)	Filing Date November 1, 2001	Group Art Unit 3673

Other Documents (include Author, Title, Date, and Place of Publication)				
Examiner	Desig.	Document		
Initial JK	C79	K.W. Hart and L.V. Jankowski, "The Application of Slant Hole Drilling in Development of Shallow Heavy Oil Deposits," THE JOURNAL OF CANADIAN PETROLEUM TECHNOLOGY, January-February 1984, Montreal, 6 pages		
	C80	Jeff Smith and Bob Edwards, "Slant Rigs Offer Big Payoffs in Shallow Drilling," OIL & GAS JOURNAL, March 30, 1992, 3 pages		
	C81	Ravil Gabdullinovich Salikhov, Evgeny Fedyorovich Dubrovin, and Vladimir Vladimirovich Sledkov, "Cluster and Dual-Lateral Drilling Technologies Optimize Russian Well Production," OIL & GAS JOURNAL, November 24, 1997, 7 pages		
	C82	Dean E. Gaddy, "Inland Barge to Allow Cluster Drilling in Niger:a," OIL & GAS JOURNAL, August 30, 1999, 7 pages		
	C83	Cliff Hogg, "Comparison of Multilateral Completion Scenarios and Their Application," SPE 38493, Society of Petroleum Engineers, Copyright 1997, 11 pages		
	C84	S.W. Bokhari, A.J. Hatch, A. Kyei and O.C. Wemgren, "Improved Recoveries in the Pickerill Field from Multilateral Drilling into Tight Gas Sands," SPE 38629, Society of Petroleum Engineers, Copyright 1997, 15 pages		
-	C85	J.R. Longbottom, Dana Dale, Kevin Waddell, Scott Bruha, and John Roberts, "Development, Testing, and Field Case Histories of Multilateral Well Completion Systems," SPE 36994, Society of Petroleum Engineers, Copyright 1996, 16 pages		
-	C86	E.J. Antczak, D.G.L. Smith, D.L. Roberts, Brent Lowson, and Robert Norris, "Implementation of an Advanced Multi-Lateral System With Coiled Tubing Accessibility," SPE/IADC 37673, Society of Petroleum Engineers, Copyright 1997, 9 pages		
	C87	H. Azoba, O. Akinmoladun, H. Rothenhofer, D. Kent and N. Nawfal, "World Record Dual- and Tri- lateral Wells," SPE/IADC 39240, Society of Petroleum Engineers, Copyright 1997, 6 pages		
	C88	R.W. Taylor and Rick Russell, "Case Histories: Drilling and Completing Multilateral Horizontal Wells in the Middle East," SPE/IADC 39243, Society of Petroleum Engineers, Copyright 1997, 14 pages		
	C89	D.K. Triolo and R.A. Mathes, "Review of a Multi-Lateral Drilling and Stimulation Program," SPE/IADC 39242, copyright 1997, Society of Petroleum Engineers, 13 pages		
	C90	John H. Perry, Leonard J. Prosser, Jr., Joseph Cervik, "Methane Drainage from the Mary Lee Coalbed, Alabama, Using Horizontal Drilling Techniques," SPE/DOE 8967, Society of Petrolcum Engineers, May 18, 1980, 6 pages		
	C91	Gerald L. Finfinger, Leonard J. Prosser, and Joseph Cervik, "Influence of Coalbed Characteristics and Geology on Methane Drainage," SPE/DOE 8964, Society of Petroleum Engineers, May 18, 1980, 6 pages		
	C92	Hilmer Von Schonfeldt, B. Rao Pothini, George N. Aul and Roger L. Henderson, "Production and Utilization of Coalbed Methane Gas in Island Creek Coal Company Mines," SPE/DOE 10817, Society of Petroleum Engineers, May 16, 1982, 10 pages		
	C93	Joseph Cervik, H.H. Fields, and G.N. Aul, "Rotary Drilling Holes in Coalbeds for Degasification," R1 8097. Bureau of Mines Reporting of Investigations, 1975, 26 pages		
	C94	D.G. Masszi and A.A. Kahil, "Coal Demethanation Principles and Field Experience," THE JOURNAL OF CANADIAN PETROLEUM TECHNOLOGY, July-August 1982, 4 pages		
JK	C95	Tobias W. Goodman, Joseph Cervik, and George N. Aul, "Degasification Study From an Air Shaft in the Beckley Coalbed," RI 8675, Bureau of Mines Report of Investigations, 1982, 23 pages		

Examiner Signature	Date Considered	
EXAMINER: Initials citation considered. Draw line through citation if no	ot in conformance and not considered. Include copy of this form with	
next communication to applicant.		

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ENT & TRACE	Other D	ocuments (include Author, Title, Date, and Place of Publication)
Examiner Initial	Desig. ID	Document
JK	C96	P.C. Thakur and H.D. Dahl, "Horizontal Drilling – A Tool for Improved Productivity," MINING ENGINEERING, March 1982, 3 pages
1	C97	P.C. Thakur and J.G. Davis II, "How to Plan for Methane Control in Underground Coal Mines," MINING ENGINEERING, October 1977, 5 pages
	C98	A.B. Yost II and B.H. Javins, "Overview of Appalachian Basin High-Angle and Horizontal Air and Mud Drilling," SPE 23445, Society of Petroleum Engineers, October 22, 1991, 14 pages
	C99	Pramod C. Thakur, "Methane Flow in the Pittsburgh Coal Seam," Third International Mine Ventilation Congress, England, U.K., June 13-19, 1984, 17 pages
	C100	Chapter 10 by Pramod C. Thakur, "Methane Control for Longwall Gobs," LONGWALL-SHORTWALL MINING, STATE OF THE ART by R.V. Ramani, published by New York: Society of Mining Engineers of the American Institute of Mining, Metallurgical, and Petroleum Engineers, 1981, 7 pages
	C101	Pramod C. Thakur, Stephen D. Lauer, and Joseph Cervik, "Methane Drainge With Cross-Measure Boreholes on a Retreat Longwall Face," Preprint No. 83-398, Society of Mining Engineers of AIME, for presentation at the SME-AIME Fall Meeting and Exhibit, Salt Lake City, Utah, October 19-21, 1983, 14 pages
	C102	Warren F. Dobson and Daniel R. Seelye, "Mining Technology Assists Oil Recovery from Wyoming Field," SPE 9418, Society of Petroleum Engineers of AIME, Copyright 1980, 7 pages
	C103	T.L. Logan, J.J. Schwoebel and D.M. Homer, "Application of Horizontal Drainhole Drilling Technology for Coalbed Methane Recovery," SPE/DOE 16409, Society of Petroleum Engineers/U.S. Department of Energy, Copyright 1997, 12 pages
	C104	Samuel O. Osisanya and Robert F. Schaffitzel, "A Review of Horizontal Drilling and Completion Techniques for Recovery of Coalbed Methane," SPE 37131, Society of Petroleum Engineers, Copyright 1996, 13 pages
	C105	S.D. Joshi, "A Review of Horizontal Well and Drainhole Technology," SPE 16868, Society of Petroleum Engineers, Copyright 1987, 17 pages
	C106	R. Bitto, A.B. Henderson and L. Broussard, "Recent Case Histories of New Well Applications for Horizontal Drilling," SPE 21262, Society of Petroleum Engineers, Copyright 1990, 12 pages
	C107	M.R. Konopczynski, John Hughes and J.E. Best, "A Novel Approach to Initiating Multi-Lateral Horizontal Wells," SPE/IADC 29385, Society of Petroleum Engineers, Copyright 1996, 11 pages
	C108	Kelly Falk and Craig McDonald, "An Overview of Underbalanced Drilling Applications in Canada," SPE 30129, Society of Petroleum Engineers, Copyright 1995, 9 pages
	C109	"Evolution Toward Simpler, Less Risky Multilateral Wells," WORLD OIL, prepared from paper SPE/IADC 67825 by Adam Pasicznyk, June 2001, 8 pages
	C110	"How Multilateral Boreholes Impact Ultimate Recovery Strategies," Offshore, July 1997, 6 pages
	C111	"Trilateral Horizontal Wells Add 10 Million bbl for Unocal," OFFSHORE, December 1993, 2 pages
	C112	Nicholas P. Chironis, "New Borehole Techniques Offer Hope for Gassy Mines," COAL AGE, January 1973, 4 pages
	C113	A. Retnanto, T.P. Frick, C.W. Brand, and M.J. Economides, "Optimal Configurations of Multiple- Lateral Horizontal Wells," SPE 35712, Society of Petroleum Engineers, Copyright 1996, 8 pages
JK	C114	T.L. Logan, "Horizontal Drainhole Drilling Techniques Used for Coal Seam Resource Exploitation," SPE 18254, Society of Petroleum Engineers, Copyright 1988, 13 pages

Examiner Signature	Date Considered
	<u> </u>
EXAMINER: Initials citation considered. Draw line through citation if no	It in conformance and not considered. Include copy of this form with

next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Qubaitute form PTO-1449 (Modified)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 17601-019001	Application No. 10/003,917	
by Applicant (Use several sheets if necessary)		Applicant Joseph A. Zupanick et al.		
		Filing Date November 1, 2001	Group Art Unit 3673	

Other Documents (include Author, Title, Date, and Place of Publication)			
Examiner Desig.			
Initial	1D	Document Deliving Chas	
JK	C115	David Hill, Eric Neme, Christine Enlig-Economides and Miguel Mollinedo, "Reentry Drilling Gives	
	0.15	New Life to Aging Fields," OILFIELD REVIEW, Autumn 1996, 14 pages	
	C116	R.L. Thoms and R.M. Gehle, "Feasibility of Controlled Solution Mining From Horizontal Wells,"	
	C110	Solution Mining Research Institute, October 24-27, 1993, 8 pages	
	C117	"World's First Trilateral Horizontal Wells on Stream," Oil & Gas Journal, November 29, 1993, 2	
ļ	CIII	pages	
	C118	Margaret A. Adams, Jeanne L. Hewitt and Rodney D. Malone, "Coalbed Methane Potential of the	
	Cito	Appalachians," SPE/DOE 10802, Society of Petroleum Engineers, Copyright 1982,10 pages	
		F.C. Schwerer and A.M. Pavone, "Effect of Pressure-Dependent Permeability on Well-Test Analyses	
	C119	and Long-Term Production of Methane From Coal Seams," SPE/DOE/GRI 12857, Society of	
i i		Petroleum Engineers, Copyright 1984, 10 pages	
		Stephen Krickovic and J.D. Kalasky, "Methane Emission Rate Study in a Deep Pocahontas No. 3	
	C120	Coalbed Mine in Conjunction With Drilling Degasification Holes in the Coalbed," RI-7703, Bureau	
		of Mines Report of Investigations/1972, United States Department of the Interior, 1972, 15 pages	
		H.H. Fields, Joseph Cervik, and T.W. Goodman, "Degasification and Production of Natural Gas	
1	C121	From an Air Shaft in the Pittsburgh Coalbed," RI-8173, Bureau of Mines Report of	
1 .]		Investigations/1976, United States Department of the Interior, 1976, 28 pages	
		Gerald L. Finfinger and Joseph Cervik, "Drainage of Methane From the Overlying Pocahontas No.	
	C122	4 Coalbed From Workings in the Pocahontas No. 3 Coalbed," RI-8359, Bureau of Mines Report of	
.	ĺ	Investigations/1979, United States Department of the Interior, 1979, 19 pages	
		Gerald L. Finfinger and Joseph Cervik, "Review of Horizontal Drilling Technology for Methane	
	C123	Drainage From U.S. Coalbeds," IC-8829, Bureau of Mines Information Circular/1980, United	
		States Department of the Interior, 1980, 24 pages	
	C124	Andre P. Jourdan and Guy A. Baron, "Elf Drills 1,000 + Ft Horizontally," PETROLEUM ENGINEER	
1 1	C124	INTERNATIONAL, September 1981, 4 pages	
	C125	P.F. Conti, "Controlled Horizontal Drilling," SPE/IADC 18708, Society of Petroleum Engineers,	
1	C123	Copyright 1989, 6 pages	
	C126	Armando R. Navarro, "Innovative Techniques Cut Costs in Wetlands Drilling," OIL & GAS	
	C120	JOURNAL, October 14, 1991, 4 pages	
	C127	Victor M. Luhowy and Peter D. Sametz, "Horizontal Wells Prove Effective in Canadian Heavy-Oil	
	C127	Field," OIL & GAS JOURNAL, June 28, 1993, 6 pages	
	C128	D. Lane Becker, "Project Management Improved Multiwell Shallow Gas Development," OIL & GAS	
l I	C120	JOURNAL, October 16, 1995, 5 pages	
	C129	Mike R. Chambers, "Junction Design Based on Operational Requirements," OIL & GAS JOURNAL,	
	C129	December 7, 1998, 7 pages	
	C130	A.J. Branch, et al., "Remote Real-Time Monitoring Improves Oriroco Drilling Efficiency," OIL &	
	C130	GAS JOURNAL, May 28, 2001, 6 pages	
	C131	D. Keith Murray, "Deep Coals Hold Big Part of Resource," THE AMERICAN OIL & GAS REPORTER,	
	(13)	May 2002, 8 pages	
	CLID	Nestor Rivera, et al., "Multilateral, Intelligent Well Completion Benefits Explored," OIL & GAS	
1	C132	IOURNAL, April 14, 2003, 10 pages	
JK	C122	HANDBOOK ON COAL BED METHANE PRODUCED WATER: MANAGEMENT AND BENEFICIAL USE	
1 01	C133	ALTERNATIVES, prepared by ALL Consulting, July 2003, 321 pages	

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	Examiner Signature	Date Considered	
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with			
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by Applicant
(Use several sheets if necessary)

Applicant
Joseph A. Zupanick et al.

(Use several sheets it necessary)

Filing Date
November 1, 2001

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& TRADE	RADE Title Date and Place of Publication)				
Other Documents (include Author, Title, Date, and Place of Publication)					
Examiner	Desig.	Document			
Initial	ID	Nikola Maricic, "Parametric and Predictive Analysis of Horizontal Well Configurations for Coalbed			
JK	C134	Methane Reservoirs in Appalachian Basin," Thesis, West Virginia University, Department of Petroleum and Natural Gas Engineering, 2004, 162 pages			
	 	Nikola Maricic, Shahab D. Mohaghegh, and Emre Artun, "A Parametric Study on the Benefits of			
	C135	Drilling Horizontal and Multilateral Wells in Coalbed Methane Reservoirs," SPE 96018, Society of			
		Petroleum Engineers, Copyright 2005, 8 pages D.P. Schlick and J.W. Stevenson, "Methane Degasification Experience at Jim Walter's,"			
	C136	Proceedings of the Twelfth Annual Institute on Coal Mining Health, Safety and Research, August			
		25-27, 1981, 9 pages P.C. Thakur, "Optimum Methane Drainage in Gassy Coal Mines," 2003 SME Annual Meeting,			
	C137	convright 2003 by SME, 4 pages			
	C138	Global Methane and the Coal Industry: A Two-Part Report on Methane Emissions from the Coal Industry and Coalbed Methane Recovery and Use, Coal Industry Advisory Board, International Energy Agency, copyright 1994, 72 pages			
	C139	Paul F. Conti and Michael Schumacher, "Solution Mining in the Nineties," Presented at the Paul 1991 meeting of the Solution Mining Research Institute, October 27-30, 1991, 11 pages			
	C140	Notification of Transmittal of the International Preliminary Report on Patentability (1 page), International Preliminary Report on Patentability (7 pages) and Amended Sheets (9 pages) for International Application No. PCT/US2004/012029 mailed August 11, 2005			
-	C141	Notification Concerning Transmittal of Copy of International Preliminary Report on Patentability (1 page), International Preliminary Report on Patentability (1 page), and Written Opinion (5 pages) for International Application No. PCT/US2005/005289 mailed September 8, 2006			
	C142	Invitation to Pay Additional Fees (2 pages) and Annex to Form PCT/ISA/206 Communication Relating to the Results of the Partial International Search (3 pages) for International Application No. PCT/IS2006/021057 mailed September 11, 2006			
JK	C143	Kalinin, D.G., et al., Translation of Selected Pages, "Boring Direction and Horizontal Wells," Moscow, "Nedra", 1997, p. 11-12, 148-152 (15 pages)			

Examiner Signature	Date Considered	
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EXAMINER: Initials citation considered. Draw line through citation	not in conformance and not considered. Include copy of this for	m with

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A TRADE									
	Other Documents (include Author, Title, Date, and Place of Publication)								
Examiner Initial	Desig. ID	Document							
4	Eric R. Skonberg and Hugh W. O'Donnell, "Horizontal Drilling for Underground Coal Gasification," presented at the Eighth Underground Coal Conversion Symposium, Keystone, Colorado, August 16, 1982 (8 pages)								
	C8	Gamal Ismail, A.S. Fada'q, S. Kikuchi, H. El Khatib, "Ten Years Experience in Horizontal Application & Pushing the Limits of Well Construction Approach in Upper Zakum Field (Offshore Abu Dhabi)," SPE 87284, Society of Petroleum Engineers, October 2000 (17 pages)							
	C9	Gamal Ismail, H. El-Khatib – ZADCO, Abu Dhabi, UAE, "Multi-Lateral Horizontal Drilling Problems & Solutions Experienced Offshore Abu Dhabi," SPE 36252, Society of Petroleum Engineers, October 1996 (12 pages)							
	C10	C.M. Matthews and L.J. Dunn, "Drilling and Production Practices to Mitigate Sucker Rod/Tubing Wear-Related Failures in Directional Wells," SPE 22852, Society of Petroleum Engineers, October 1991 (12 pages)							
	CII	H.H. Fields, Stephen Krickovic, Albert Sainato, and M.G. Zabetakis, "Degasification of Virgin Pittsburgh Coalbed Through a Large Borehole," RI-7800, Bureau of Mines Report of Investigations/1973, United States Department of the Interior, 1973 (31 pages)							
V	C12	William P. Diamond, "Methane Control for Underground Coal Mines," IC-9395, Bureau of Mines Information Circular, United States Department of the Interior, 1994 (51 pages)							

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U.S. Patent Documents							
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Foreign Patent Documents or Published Foreign Patent Applications								
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	Other D	ocuments (include Author, Title, Date, and Place of Publication)
Examiner Initial	Desig. ID	Document
JK C1 9, Cavendar 2-20-13, Cavendar 3-20-13, and C		Arkoma, John Chambers 5-5-18, John Chambers 2-5-26, John Chambers 1-6-10, Pam Adams 4-12-9, Cavendar 2-20-13, Cavendar 3-20-13, and Conmack 3-30-05, Horizontal Multilateral Wells, Gas and Water Production, December 2001 through April 2005 (35 pages)
	C2	Alberta, Angel 07-14, Vertical Pilot Well, Gas and Water Production, July 2002 through May 2005 (1 page)
	C3	West Virginia, Pinnacle Field, Wyoming, 8M-5, 91-B (#3 & #4), 91-C (#3 & #4), 91-D, 91-E, 92-B, 92-C, 92-D, 92-E, 93-B, 93-C, Penn 4-B, Penn 4-C, Penn 4-D, S2-B, S2-C, S3-B (#3 & #4), S3-C, S4-B (#3 & #4), S4-C, S5-B, S5-C, S5-D, S5-E (#3 & #4), S6-B (#3 & #4), S6-C (#3 & #4), S6-D (#3 & #4), and S6-E (#3 & #4), Multilateral Wells, Gas Production, July 2000 through November 2004 (22 pages)
	C4	Colorado, Anderson #1R, Horizontal Multilateral Well, Gas and Water Production, November 2002 through April 2005 (19 pages)
	C5	Colorado, Penrose #1R, Horizontal Multilateral Well, Gas and Water Production, May 2002 through May 2005 (24 pages)
	C6	Arkoma, Chambers 3-6-2, Chambers 4-5-18, Chambers 4-6-8, Chambers 5-5-22, Chambers 6-5-30, Chambers 1-8-4, Chambers 1-7-2, Chambers 1-6-10, Carden 2-8-2, Carden 1-8-10, Helker 1-8-14, Helker 2-8-12, Brewer 1-8-1, Harbottle 1-8-3, Steele 1-7-8, Steele 2-7-10, Perry 1-7-16, Adams 4-12-9, Cavender 2-20-13, Cavender 3-20-13, Conmack 2-30-05, Conmack 3-30-05 and Trounce 3-29-6, Gas and Water Production, December 2001 through March 2005 (71 pages)
	C7	Anderson #1R Horizontal Multilateral Historic Production, 13 pages
	C8	Penrose #1R Horizontal Multilateral Historic Production, 24 pages
	C9	Anderson #1 Horizontal Multilateral Production Graph, 1 page
JK	C10	M.J. Mavor et al., Formation Evaluation of Exploration Coalbed Methane Wells, paper to be presented at international technical meeting hosted by Petroleum Society of CIM and the Society of Petroleum Engineers in Calgary, June 10-13, 1990, 12 pages

Examiner Signature /John Kreck/ (11/24/2006)	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if no next communication to applicant.	
	Substitute Disclosure Form (PTO-1449)